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sented in the figure, but eroded and of unequal thickness, especially those on the right, toward the centre. Mycelium and pectin bodies as in Fig. 1. Fig. 3. Tangential section corresponding to Figs. 1 and 2, $\times 140$. The ellipses indicate the former position of the absorbed medullary rays. Fig. 4. Tangential section of one of the outermost cells of Fig. 1., $\times 500$, showing mycelium and bordered pits in cellwall. Fig. 5. One of the cells of Fig. 1 magnified $\times 300$. Fig. 6. Cross-section from central root $\times 140$. The large, irregular, empty space on the right, as well as all the cells, were filled with pectin granules, as shown in Fig 7, which represents the group of three cells at *c* in Fig. 6 magnified $\times 700$. Fig. 8. Radial section of a similar cell $\times 700$.—Somewhat higher powers than those given were used in drawing the hyphæ and pectin bodies of Figs. 1 to 5.

New North American Grasses.

By F. LAMSON SCRIBNER.

BOUTELOUA TRIFIDA, Thurber, Gram. Mex. Bound. Survey, ined. —Perennial, 6–15 in. high, tufted and geniculate at the base; leaves 2 in. or less long, very narrow and usually involute, strigose-scabrous above and more or less rigid; spikes 3 to 6, pectinately many-flowered .5–1 in. long, erect or slightly spreading on short hairy pedicels; spikelets (including setæ) 3–4 lines long; outer glumes unequal, the upper and larger one about 2 lines long, both smooth, unequally 2-toothed and short awned; flowering-glume, exclusive of awns, about 1 line long, smooth or sparsely pilose, especially near the margins above; pedicel of the sterile floret smooth, bearing three awns, which equal those of the flowering-glume.

Texas and New Mexico; G. R. Vasey. Mexico; Dr. E. Palmer, No. 1,355, 1880. Dr. Palmer's specimens are taller, slenderer and more leafy than those from Texas and New Mexico. The latter have the base of the culms densely clothed with inflated sheaths that are tipped with short mucro-like leaves; the upper leaf also is much reduced, frequently not over a line in length.

This species is closely allied to the next, but is readily distinguished by its nearly smooth flowering-glume and longer and more slender awns.

BOUTELOUA BURKII, *n. sp.*—Culms slender, tufted, 4–6 in. high, erect or geniculate below, smooth or finely glandular-pubescent; leaves divergent, short, the upper .5 in. or less long, narrow and involute, smooth or, with the sheaths, glandular-pubescent, often with a few scattered longer hairs; spikes 3–5, about .5 in. long, pectinately many-flowered, erect or ascending; spikelets, including setæ, a little over 2 lines long; outer glumes ovate, smooth, nearly equal, the upper about a line in length, both usually very short awned just below the unequally bifid tip; flowering-glume, exclusive of the three continuous and equal awns, less than a line long, pilose with stiff hairs on the back and margins below; pedicel of rudiment .5 line long, smooth, bearing three equal and minutely scabrous awns 2.5 lines long, which are more or less enlarged and flattened near the base.

Laredo, Texas; Mrs. Anna B. Nickles; communicated to me by Mr. Isaac Burk of Philadelphia, for whom the species is named. Sandy plains, Upper Concho, West Texas; J. Reverchon; =No. 3,440* Curtis's Distribution North American Plants.

BOUTELOUA HAVARDI, Vasey, *in lit.*—" (Section *Atheropogon*). Culms 10-15 in. high; lower leaves numerous, flat, rigid, 3-6 in. long, 1-2 lines wide, more or less pubescent on the margins below and on the sheaths, upper leaves short (1-2 in.); ligule a ciliate line; panicle 2-3 in. long, erect, composed of 5 or 6 approximate short spikes of about 10, crowded, erect 1-flowered spikelets; outer glumes lanceolate, the lower nearly as long as the flower, the upper, half as long; flowering-glume 2.5 lines long, broad-oval, 3-lobed, the lobes extending nearly half way down, the lateral ones becoming somewhat recurved; palet as long as its glume, narrow, with two stout recurved teeth at the apex; sterile flower longer than the perfect one, the pedicel 1 line long, the three awns each 4 lines, the middle one membranous-margined nearly to the apex. The crowded rhachis and outer glumes, as also the back of the flowering-glume and palet, clothed with long villous hairs.

"Discovered in the Limpia Mts. of Western Texas by Dr. V. Havard, U. S. A., for whom it is named." (Geo. Vasey.)

BOUTELOUA PUSILLA, Vasey, ined.—Perennial(?), 2 to 3 inches high; leaves smooth, very narrow and involute, the upper an inch long; spikes solitary, pectinately 10-15-flowered, about .5 inch in length; rhachis smooth; spikelets (including setæ) about 2 lines long, outer glumes smooth, the upper broadly lanceolate, 1.5 line long; twice the length of the unequally 1-nerved lower one; flowering-glume very hairy at the base and on the lateral and middle nerves below, the long middle lobe 2-cleft, the stout central seta a line long, exceeding the two lateral ones; palet very broad, and longer than its glume; pedicel of sterile floret .5 line long, with a tuft of hairs at the top, and bearing two or three rudimentary, hooded glumes or scales and three equal awns exceeding a line in length.

New Mexico; G. R. Vasey, 1881.

TRisetum HALLII, *n. sp.*—Culms slender, 6-18 in. high, smooth; leaves flat, a line or less wide; minutely scabrous, involute near the tip; panicle contracted, 2-4 in. long, the erect and densely flowered branches an inch or less long; spikelet about 2.5 lines long, 2-3-flowered, the nearly smooth rhachis prolonged above the upper floret, and often bearing a slender hair-like awn; outer glumes about 1.5 line long, equal in length, obtuse, the lower narrowly oblong, 3-nerved, the upper much broader and 5-nerved, nerves prominent, aculeate-scabrous, the lateral ones terminating below the scarious margin, which is finely ciliate on the edge; the first flowering-glume 1.5-2 lines long, tuberculate-roughened on the back and scabrous near the tip, terminating in two acute teeth and bearing a scabrous, straight awn a line long, teeth of the second and third florets prolonged into slender setæ less than a line in length, awn longer, twisted below and bent near the middle; palea about two-thirds as long as its glume; grain smooth, about 1 line long.

Named for the late Elihu Hall, in whose Texan collection (1872) it was distributed under No. 799, mixed with *Trisetum elongatum*, Kth. (*T. interruptum*, Buckley; No. 3,546* of Curtiss's Distribution of 1883) to which it is closely allied and which it much resembles in habit, but from which it differs essentially in its broader and obtuse

outer glumes, and in having the lowest awn straight and shorter than the others. Brazos County, Texas; G. C. Nealley, 1883.

A New Grass.

By GEO. VASEY.

AMMOPHILA CURTISSII.—Culms 3 to 6 feet high, from a strong, perennial rhizoma, growing singly or in small tufts; base of the culm clothed with the rigid, imbricated, 2-ranked sheaths, above the base 3 or 4 distant leaves, the sheaths shorter than the internodes, very smooth, firm, the ligule an obscure, ciliate ring, the blade becoming involute and setaceous, 4 to 12 inches long.

Panicle 8 to 10 inches long, narrow and strict, the rhachis roughish, the branches very numerous, single, or in pairs below; erect, loosely flowered, sub-divided nearly to the base, the lower ones two to three inches long. Spikelets short-pedicelled, 2 to 2.25 lines long; the outer glumes unequal, keeled, nerveless, the lower one ovate, obtuse, half to two-thirds as long as the upper, which is two lines long, barely acute; the flowering-glume and its palet of similar texture and equal length, slightly longer than the larger outer glume, obtuse or acutish, strongly ciliate on the keel of the flowering-glume and on the two keels of the palet, the basal hairs scant and about one-third as long as the flower.

This was distributed in 1879 by Mr. A. H. Curtiss as *Calamagrostis brevipilis* (now *Ammophila brevipilis*), from which it differs in its greater size, its longer involute leaves, and its much longer and narrower panicle, with the branches sub-divided and flowering nearly to the base; the flowers are very similar, but differ notably in the latter having a ring of very short hairs at the base of the outer glumes beside those at the base of the flowers.

Collected by Mr. A. H. Curtiss on the Indian River, Florida, and to him I take pleasure in dedicating the species.

The Pteridophyta of Litchfield Co., Ct.—During the past three summers I have spent a portion of my vacation in Litchfield County, Ct., and am able to report a considerable fern list, with a few new stations for some species. Most of my collecting has been confined to the towns of Cornwall and Goshen, extending once to Bantam Lake, where the extremely local *Marsilia quadrifolia* is found, and once to Salisbury and northward along the mountains of S. W. Massachusetts. In the list, C stands for Cornwall for species not found in Goshen, and S for Salisbury.

EQUISETACEÆ.—*Equisetum arvense*, L., *E. sylvaticum*, L., *E. hiemale*, L. (3).

OPHIOGLOSSACEÆ.—*Ophioglossum vulgatum*, L., *Botrychium simplex*, Hitch., *B. ternatum*, Swz., *B. lanceolatum*, Angs., *B. Virginianum*, Swz. (5).

I have never found *B. lanceolatum* elsewhere except with its congener *B. matricariæfolium*. Diligent search here failed to reveal it. *B. simplex* is probably new to the State.

FILICES.—*Polypodium vulgare*, L., *Adiantum pedatum*, L., *Pteris aquilina*, L., *Asplenium ebeneum*, Ait., *A. Trichomanes*, L. (S), *A.*